

Patent
52478-5900**IN THE CLAIMS:**

1. (Previously Presented) A mobile communication terminal for performing reception and transmission using an adaptive array method, the mobile communication terminal being provided with (a) a plurality of antennas, (b) reception means for forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern, and (c) transmission means for transmitting at least one of a transmission signal using the directivity pattern formed in reception and an omnidirectional transmission signal, the mobile communication terminal comprising:

detection means for detecting a reception error in the reception signal; and

transmission control means for controlling the transmission means, wherein when the detection means detects the reception error in the reception signal the transmitted transmission signal is the omnidirectional transmission signal and when the detection means does not detect the reception error, the transmission signal is transmitted in the directivity pattern formed in reception.

2. (Previously Presented) The mobile communication terminal of Claim 1,

wherein when the detection means detects the reception error, the transmission control means controls the transmission means so that the omnidirectional transmission signal is formed using one of the plurality of antennas, and the transmission signal is transmitted in an omnidirectional pattern.

3. (Previously Presented) The mobile communication terminal of Claim 2,

wherein when the detection means detects the reception error, the transmission control means controls the transmission means so that the omnidirectional transmission signal is

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formed using one of the plurality of antennas that has the largest antenna gain, and the transmission signal is transmitted in the omnidirectional pattern.

4. (Previously Presented) The mobile communication terminal of Claim 2 further comprising:

5 selection means for measuring a quality of the reception signal for each of the plurality of antennas and selecting an antenna with the highest reception quality,

wherein when the detection means detects the reception error, the transmission control means controls the transmission means so that the omnidirectional pattern is formed using the antenna selected by the selection means, and the transmission signal is transmitted in
10 the omnidirectional pattern.

5. (Previously Presented) A mobile communication method for performing reception and transmission using an adaptive array method, the mobile communication terminal being provided with (a) a plurality of antennas, (b) reception means for forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception
15 signal from the base station using the formed directivity pattern, and (c) transmission means for transmitting at least one of a transmission signal using the directivity pattern formed in reception and an omnidirectional transmission signal, the mobile communication method comprising:

detection step for detecting a reception error in the reception signal; and

transmission control step for controlling the transmission means, wherein when
20 the detection step detects the reception error in the reception signal the transmitted transmission signal is the omnidirectional transmission signal and when the detection step does not detect the

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reception error, the transmission signal is transmitted in the directivity pattern formed in reception.

6. (Previously Presented) The communication method of Claim 5,
wherein when the detection step detects the reception error, the transmission
5 control step controls the transmission means so that the omnidirectional transmission signal is
formed using one of the plurality of antennas, and the transmission signal is transmitted in an
omnidirectional pattern.

7. (Previously Presented) The communication method of Claim 6,
wherein when the detection step detects the reception error, the transmission
10 control step controls the transmission means so that the omnidirectional transmission signal is
formed using one of the plurality of antennas that has the largest antenna gain, and the
transmission signal is transmitted in the omnidirectional pattern.

8. (Previously Presented) The communication method of Claim 6 further
comprising:
15 selection step for measuring a quality of the reception signal for each of the
plurality of antennas and selecting an antenna with the highest reception quality,
wherein when the detection step detects the reception error, the transmission
control step controls the transmission means so that the omnidirectional pattern is formed using
the antenna selected by the selection means, and the transmission signal is transmitted in the
20 omnidirectional pattern.

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9. (Previously Presented) A program to be executed by a computer in a mobile communication terminal for performing reception and transmission using an adaptive array method, the program being stored on a computer-readable recording medium, the mobile communication terminal being provided with (a) a plurality of antennas, (b) reception means for
5 forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern, and (c) transmission means for transmitting at least one of a transmission signal using the directivity pattern formed in reception and an omnidirectional transmission signal, the program comprising:

detection step for detecting a reception error in the reception signal; and

10 transmission control step for controlling the transmission means, wherein when the detection step detects the reception error in the reception signal the transmitted transmission signal is the omnidirectional transmission signal and when the detection step does not detect the reception error, the transmission signal is transmitted in the directivity pattern formed in reception.

15 10. (Previously Presented) The program of Claim 9,

wherein when the detection step detects the reception error, the transmission control step controls the transmission means so that the omnidirectional transmission signal is formed using one of the plurality of antennas, and the transmission signal is transmitted in an omnidirectional pattern.

20 11. (Previously Presented) The program of Claim 10,

wherein when the detection step detects the reception error, the transmission control step controls the transmission means so that the omnidirectional transmission signal is

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formed using one of the plurality of antennas that has the largest antenna gain, and the transmission signal is transmitted in the omnidirectional pattern.

12. (Previously Presented) The program of Claim 10 further comprising:

selection step for measuring a quality of the reception signal for each of the
5 plurality of antennas and selecting an antenna with the highest reception quality,

wherein when the detection step detects the reception error, the transmission control step controls the transmission means so that the omnidirectional pattern is formed using the antenna selected by the selection means, and the transmission signal is transmitted in the omnidirectional pattern.

10 13. (Currently Amended) A mobile communication terminal for performing reception and transmission using an adaptive array method, the mobile communication terminal being provided with (a) a plurality of antennas, (b) a reception circuit which multiplies a signal received using each of the plurality of antennas by a weight vector, and (c) a transmission circuit which transmits the multiplied signal using each of the plurality of antennas, the reception circuit
15 forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern, and the transmission circuit transmitting at least one of a transmission signal using the directivity pattern formed in reception and an omnidirectional transmission signal, the mobile communication terminal comprising:

20 detection means for detecting a reception error in the reception signal; and

transmission control means for controlling the transmission circuit, wherein when the detection means detects the reception error in the reception signal ~~so that a pattern different~~

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~~from the directivity pattern formed in reception is formed and the transmitted transmission signal~~
~~is the omnidirectional transmission signal and when the detection means does not detect the~~
~~reception error, the transmission signal is transmitted in the formed pattern instead of the~~
directivity pattern formed in reception.

5 14. (Previously Presented) The mobile communication terminal of Claim 13,

wherein when the detection means detects the reception error, the transmission control means controls the transmission means so that the omnidirectional transmission signal is formed using one of the plurality of antennas, and the transmission signal is transmitted in an omnidirectional pattern.

10 15. (Previously Presented) The mobile communication terminal of Claim 14,

wherein when the detection means detects the reception error, the transmission control means controls the transmission means so that the omnidirectional transmission signal is formed using one of the plurality of antennas that has the largest antenna gain, and the transmission signal is transmitted in the omnidirectional pattern.

15 16. (Previously Presented) The mobile communication terminal of Claim 14 further comprising:

selection means for measuring a quality of the reception signal for each of the plurality of antennas and selecting an antenna with the highest reception quality,

20 wherein when the detection means detects the reception error, the transmission control means controls the transmission means so that the omnidirectional pattern is formed using the antenna selected by the selection means, and the transmission signal is transmitted in the omnidirectional pattern.

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17. (Previously Presented) A communication method used for a mobile communication terminal for performing reception and transmission using an adaptive array method, the mobile communication terminal being provided with (a) a plurality of antennas, (b) a reception circuit which multiplies a signal received using each of the plurality of antennas by a weight vector, and (c) a transmission circuit which transmits the multiplied signal using each of the plurality of antennas, the reception circuit forming a directivity pattern for receiving a desired reception signal from a base station and receiving the reception signal from the base station using the formed directivity pattern, and the transmission circuit transmitting at least one of a transmission signal using the directivity pattern formed in reception and an omnidirectional transmission signal, the mobile communication method comprising:

detection step for detecting a reception error in the reception signal; and

transmission control step for controlling the transmission means, wherein when the detection step detects the reception error in the reception signal the transmitted transmission signal is the omnidirectional transmission signal and when the detection step does not detect the reception error, the transmission signal is transmitted in the directivity pattern formed in reception.

18. (Previously Presented) The communication method of Claim 17,

wherein when the detection step detects the reception error, the transmission control step controls the transmission means so that the omnidirectional transmission signal is formed using one of the plurality of antennas, and the transmission signal is transmitted in an omnidirectional pattern.

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19. (Previously Presented) The communication method of Claim 18,
wherein when the detection step detects the reception error, the transmission
control step controls the transmission means so that the omnidirectional transmission signal is
formed using one of the plurality of antennas that has the largest antenna gain, and the
5 transmission signal is transmitted in the omnidirectional pattern.

20. (Previously Presented) The communication method of Claim 18 further
comprising:

selection step for measuring a quality of the reception signal for each of the
plurality of antennas and selecting an antenna with the highest reception quality,

10 wherein when the detection step detects the reception error, the transmission
control step controls the transmission means so that the omnidirectional pattern is formed using
the antenna selected by the selection means, and the transmission signal is transmitted in the
omnidirectional pattern.

21. (Previously Presented) A program to be executed by a computer in a mobile
15 communication terminal for performing reception and transmission using an adaptive array
method, the program being stored on a computer-readable recording medium, the mobile
communication terminal being provided with (a) a plurality of antennas, (b) a reception circuit
which multiplies a signal received using each of the plurality of antennas by a weight vector, and
(c) a transmission circuit which transmits the multiplied signal using each of the plurality of
20 antennas, the reception circuit forming a directivity pattern for receiving a desired reception
signal from a base station and receiving the reception signal from the base station using the
formed directivity pattern, and the transmission circuit transmitting at least one of a transmission

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signal using the directivity pattern formed in reception and an omnidirectional transmission signal, the program comprising:

detection step for detecting a reception error in the reception signal; and

transmission control step for controlling the transmission means, wherein when

5 the detection step detects the reception error in the reception signal the transmitted transmission signal is the omnidirectional transmission signal and when the detection step does not detect the reception error, the transmission signal is transmitted in the directivity pattern formed in reception.

22. (Previously Presented) The program of Claim 21,

10 wherein when the detection step detects the reception error, the transmission control step controls the transmission means so that the omnidirectional transmission signal is formed using one of the plurality of antennas, and the transmission signal is transmitted in an omnidirectional pattern.

23. (Previously Presented) The program of Claim 22,

15 wherein when the detection step detects the reception error, the transmission control step controls the transmission means so that the omnidirectional transmission signal is formed using one of the plurality of antennas that has the largest antenna gain, and the transmission signal is transmitted in the omnidirectional pattern.

24. (Previously Presented) The program of Claim 22 further comprising:

20 selection step for measuring a quality of the reception signal for each of the plurality of antennas and selecting an antenna with the highest reception quality,

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wherein when the detection step detects the reception error, the transmission control step controls the transmission means so that the omnidirectional pattern is formed using the antenna selected by the selection means, and the transmission signal is transmitted in the omnidirectional pattern.

5 25. (Previously Presented) A method for ensuring a signal is transmitted to a proper destination, comprising the steps of:

receiving, from a base station, a first signal at a mobile communication device, the first signal comprising a first directivity pattern;

10 determining, by the mobile communication device, whether the first signal includes a reception error; and

transmitting, by the mobile communication device, one of a second signal to the base station when the first signal does not include the reception error, the second signal comprising a second directivity pattern corresponding to the first directivity pattern, and a third signal comprising an omnidirectional pattern when the first signal includes the reception error.

15 26. (Previously Presented) The method of claim 25, wherein the first signal includes the reception error, the method further comprising the steps of:

receiving, from the base station, a fourth signal at the mobile communication device, the fourth signal comprising a third directivity pattern;

20 determining, by the mobile communication device, that the fourth signal does not include the reception error; and

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transmitting, by the mobile communication device, a fifth signal to the base station, the fifth signal comprising a fourth directivity pattern corresponding to the third directivity pattern.

27. (Previously Presented) The method of claim 26, further comprising the step of:
5 transmitting, by the mobile communication device, a sixth signal comprising the omnidirectional pattern prior to the step of the mobile communication device determining the fourth signal does not include the reception error.

28. (Previously Presented) The method of claim 27, further comprising the step of:
10 continuing, by the mobile communication device, to transmit signals comprising the omnidirectional pattern after the step of the mobile communication device transmitting the sixth signal until the step of the mobile communication device determining the fourth signal does not include the reception error.

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